

Claims

1. A method for displaying on a cellular terminal map data from a map data bank connected with a cellular network, which method comprises
 - a step in which map data retrieval from a map data bank is started at the terminal,
 - 5 - a step in which the map data are transferred to the terminal,
 - steps in which the map presentation on the terminal's display is enhanced, and
 - a step in which the map data are shown on the terminal's display,
 wherein the map data contained in the map data bank are arranged in hierarchic map levels to be enhanced in a stepwise manner so that when a map retrieval is started, a

10 map of the coarsest hierarchic level is fetched to the terminal and the fetched map is divided on the display of the terminal into at least two equal-sized sections one of which can be selected by means of the terminal for a more detailed map data retrieval and presentation.
2. A method according to claim 1 wherein the map data contained in the map

15 data bank are arranged into a map hierarchy according to the quadtree system.
3. A method according to claim 1 wherein the geographical position of the terminal is determined at the start of map data retrieval, after which a map record at the coarsest level of the map hierarchy is fetched to the terminal's display, which map record has the coordinates of the said geographical position.
- 20 4. A method according to claim 3 wherein the location for the terminal is carried out by a GPS positioning device in the terminal.
5. A method according to claim 2 wherein the quadtree map data fetched to the display are divided on the terminal's display screen into four equal-sized sections which correspond to the quadtree map records retrieved from the map data bank.
- 25 6. A method according to claim 5 wherein in the next step, one of the four displayed quadtree map sections is selected, and after the selection, map data for this selected map section, which map data have been saved using a higher resolution, are fetched from the map data bank to the terminal's display.
7. A method according to claim 6 wherein the map data according to the

30 previous displayed quadtree level is saved in the terminal.

8. A method according to claim 7 wherein user-specific auxiliary data, which are not map data proper, are saved in the terminal so that the said auxiliary data may be shown in connection with any map display according to the quadtree system.

9. A method according to claim 6 wherein the selection of the quadtree map section displayed on the terminal is realized by pressing a key on the terminal.

10. A method according to claim 5 wherein the quadtree arrangement fetched from the map data bank is drawn on the terminal's display so that it is enhanced step by step.

11. A location data arrangement in a cellular telephone system, comprising:

- 10 - a map data bank connected with a cellular network,
 wherein map data in the map data bank are arranged in hierarchic map levels that become more detailed step by step,
- a public cellular network,
- a cellular terminal the display of which is arranged to be used as a map display,
- 15 and
- a means at the terminal to determine the geographical position of the terminal.

12. A location data arrangement according to claim 11 wherein the hierarchic map data in the map data bank in the cellular telephone system are arranged in the form of a quadtree.

13. A location data arrangement according to claim 11 wherein the means for determining the position of the terminal comprises a GPS positioning device.

14. A location data arrangement according to claim 11 wherein the map data fetched from the map data bank are arranged to be saved in the terminal for later use.

15. A location data arrangement according to claim 11 wherein user-specific auxiliary information, which does not belong to the map proper, is arranged to be saved in the terminal.

16. A cellular terminal comprising:

- 30 - a means for receiving map data from base stations,
- a means for saving into its memory map data,
 which is retrieved from a hierarchically arranged map data bank,
- a means for displaying retrieved map data,

- a means for inputting data to the terminal,
- a means for sending messages and
- a means for determining the geographical position of the terminal.

5 17. A terminal according to claim 16 wherein the terminal comprises a means for saving the quadtree map data it has received.

18. A terminal according to claim 17 wherein the display of the terminal is divided into four equal-sized sections which are arranged so as to correspond to the subrecords of the quadtree map records.

10 19. A terminal according to claim 18 wherein one of the map sections on the display of the terminal is arranged to be selected by the user for the retrieval of more detailed map data.

15 20. A terminal according to claim 19 wherein four keys in the keyboard have been arranged to function as a means for selecting a displayed map section according to the quadtree system.

21. A terminal according to claim 19 wherein the terminal comprises a means for selecting a map section using a voice command.

22. A terminal according to claim 16 wherein part of its memory has been allocated to save user-specific information that does not belong to the map data.

20 23. A terminal according to claim 16 wherein the means for determining the geographical position of the terminal comprises a GPS positioning device.